

WHAT IS CLAIMED IS:

1. A system for identifying priority level information for a data frame received by a network device, comprising:

a plurality of input ports configured to receive a plurality of data frames, each of the received data frames specifying at least one of a plurality of classes of service;

5 a memory configured to store priority level information corresponding to each of the classes of service;

an action generator configured to generate an action tag for each of the received data frames; and

10 a port vector queue configured to use the action tag from the action generator for each of the received data frames to access the memory to identify the priority level information associated with the received data frame.

2. The system of claim 1, further comprising:

a plurality of priority queues associated with each of a plurality of output ports of the network device.

3. The system of claim 2, wherein the port vector queue is further configured to identify one of the priority queues for each of the received data frames based on the identified priority level information.

4. The system of claim 1, wherein the memory is preprogrammed with the priority level information.

5. The system of claim 1, wherein the memory includes a plurality of registers.

6. The system of claim 1, wherein the memory stores a lookup table.

7. The system of claim 1, wherein the action generator includes:

an action memory configured to store a plurality of entries,

a decoder configured to identify one of the entries in the action memory in response to the received data frames, and

5 a tag generator configured to generate the action tags based on the identified entries.

8. The system of claim 7, wherein each of the entries includes:
a differentiated services code point (DSCP)/priority field configured to store one of
DSCP data and priority data relating to one of the classes of service,
a deny field configured to store data indicating whether to drop a corresponding one of
10 the received data frames,
a forward-to-management field configured to store data indicating whether to forward
the corresponding data frame to a management device,
a priority field configured to store data indicating whether the DSCP/priority field
stores valid priority data, and
15 a DSCP field configured to store data indicating whether the DSCP/priority field stores
valid DSCP data.

9. A method for identifying priority level information for a data frame received by
a network device, comprising:

programming a memory with priority level information corresponding to a plurality of
classes of service;

5 receiving a plurality of data frames, each of the received data frames specifying at least
one of the classes of service;

generating an action tag for each of the received data frames; and

accessing the memory to identify the priority level information associated with each of
the received data frames using the action tags corresponding to the received data frames.

10. The method of claim 9, further comprising:

identifying one of a plurality of priority queues for each of the received data frames
based on the identified priority level information.

11. The method of claim 9, wherein the memory includes one of a plurality of
registers and a lookup table.

12. The method of claim 9, wherein generating an action tag includes:

storing a plurality of entries,

identifying one of the stored entries in response to the received data frames, and

generating the action tags based on the identified entries.

13. The method of claim 12, wherein each of the entries includes:

a differentiated services code point (DSCP)/priority field configured to store one of DSCP data and priority data relating to one of the classes of service,
5 a deny field configured to store data indicating whether to drop a corresponding one of the received data frames,

a forward-to-management field configured to store data indicating whether to forward the corresponding data frame to a management device,

a priority field configured to store data indicating whether the DSCP/priority field stores valid priority data, and

10 a DSCP field configured to store data indicating whether the DSCP/priority field stores valid DSCP data.

14. A multiport network device, comprising:

a plurality of input ports configured to receive a plurality of data frames, each of the data frames specifying at least one of a plurality of classes of service;

5 a plurality of output ports configured to transmit at least some of the data frames;

a plurality of priority queues associated with each of the output ports;

a memory configured to store priority level information corresponding to each of the classes of service;

an action generator including

an action memory configured to store a plurality of entries,

10 a decoder configured to identify one of the entries in the action memory for each of the data frames, and

a tag generator configured to generate an action tag based on the entry identified for each of the data frames; and

a port vector queue configured to access the memory to identify the priority level

15 information associated with each of the data frames using the action tag from the action generator for the data frame and identify one of the priority queues based on the identified priority level information for the data frame.

15. The multiport network device of claim 14, wherein the memory is configured to be preprogrammed with the priority level information by a host device.

16. The multiport network device of claim 14, wherein the memory includes a plurality of registers, each of the registers being configured to store priority level information corresponding to one or more of the classes of service.

17. The multiport network device of claim 14, wherein the memory stores a lookup table.

18. The multiport network device of claim 14, wherein each of the entries includes:
a differentiated services code point (DSCP)/priority field configured to store one of
DSCP data and priority data relating to one of the classes of service,
a deny field configured to store data indicating whether to drop a corresponding one of
the data frames,
5 a forward-to-management field configured to store data indicating whether to forward
the corresponding data frame to a management device,
a priority field configured to store data indicating whether the DSCP/priority field
stores valid priority data, and
10 a DSCP field configured to store data indicating whether the DSCP/priority field stores
valid DSCP data.

19. The multiport network device of claim 14, further comprising:
a port filter configured to apply policy rules to the data frames to identify one or more
policy equations corresponding to the data frames.

20. The multiport network device of claim 19, wherein the decoder is configured to receive the one or more policy equations corresponding to one of the data frames from the port filter, select one of the one or more policy equations, and use the selected policy equation to identify one of the entries in the action memory.